

NEW LOCATIONS FOR *PODOSTEMUM*
CERATOPHYLLUM
MICHX. (PODOSTEMACEAE) IN NEW HAMPSHIRE
AND MAINE, WITH SOME COMMENTS ON
A UNIQUE FLORAL FORM.

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Podostemum ceratophyllum Michx. (Riverweed) is a freshwater aquatic dicot that grows attached to rocks in rapids. This species is included on the New England regional rare and endangered plant list and was reported as rare in all the New England states but New Hampshire (Crow et al., 1981). However, I believe the lack of documentation of this plant in New England is a result of its being overlooked and subsequently undercollected. As noted earlier (Philbrick, 1981), possible reasons for this are the growth habit of the plant—which at a glance can be mistaken for an alga, and the often inaccessible habitat in which it grows.

During the summer of 1981 I visited numerous habitats in rivers in south-central New Hampshire and southern Maine in search of *Podostemum*. As a result of these visits I found the species growing in five rivers (eight additional towns) where it had not been previously reported. Additional sites, located in four towns, were also found in rivers already known to contain the plant.

In Maine *Podostemum* was found growing in four “new” rivers: the Sheepscot River, Lincoln Co. (Alna and several locations in Whitefield); Royal River, Cumberland Co. (Yarmouth); Androscoggin River, Cumberland Co.-Sagadahoc Co. line (Brunswick-Topsham line); and the Mousam River, York Co. (Kennebunk and Sanford).

I have thus far found one “new” river for *Podostemum ceratophyllum* in New Hampshire; the Ossipee River, Carroll Co. (Effingham-Freedom line). Mr. Peter Zika (pers. comm.) has recently collected the plant from the Connecticut River in Plainfield, Sullivan Co. This species is well documented from the Contoocook River in Boscawen, New Hampshire. I examined several rapid habitats upstream from Boscawen and found additional locations for the plant in Hopkinton and, as a result of

information supplied by Mr. Leslie Mehrhoff (pers. comm.), in Henniker. Both of these towns are in Merrimack Co.

The late Dr. Albion Hodgdon collected *Podostemum ceratophyllum* from the Lamprey River in Durham and Lee, New Hampshire. I found additional sites for the plant further upstream in this river in the towns of Epping and Raymond.

When flowers from the plants growing in the Mousam River, Kennebunk, Maine were examined, a previously unreported floral form was observed. The most striking difference between these flowers and those typically encountered was in the number of anthers per flower. Instead of the usual two or three anthers these possessed four, five, and sometimes six and seven anthers. A sample of 73 flowers was checked, of which 36 (49.4%) had four anthers, 28 (38.4%) had five, 5 (6.8%) six, and 2 (2.7%) had seven anthers. Only 2 flowers (2.7%) of the total sample had the usual two-anther complement. The stamen filaments in flowers of *Podostemum* are normally fused into a compound filament. In the case of these flowers, however, this compound filament is often twice the size of that normally found.

I also observed other floral appendages. One such appendage was green, somewhat resembling a leaf, but it seemed to arise from the lower part of the stamen filament and is very contorted in appearance. Another type is also green but is markedly flattened against the ovary and arises from its base. Anatomical and morphological investigations are currently underway to determine the nature of these unusual floral forms.

It is perhaps important to note here that many of the suitable habitats in the above mentioned rivers have yet to be visited and more locations for the plant probably will be found. For example, the Androscoggin River begins in northern New Hampshire and flows southeast across Maine, but *Podostemum* has only been collected far downstream in Brunswick, Maine. Suitable habitats no doubt occur in numerous other locations throughout the river.

Regeneration of plant fragments as a means of vegetative reproduction is known in *Podostemum ceratophyllum* (Hammond, 1936); the dispersal of these fragments may help to explain why the plant is often found in interconnected rivers. This information can also be used to find additional populations. For example, *Podostemum* is known from the Ossipee River in central New Hampshire.

This river flows east into Maine and empties into the Saco River in Cornish. As a result it is likely that new populations of the plant will be found in the Saco River, though as yet none are reported.

From these additions to the documented sites for *Podostemum* it is evident that the plant is not as rare as previously believed, at least in the region examined. I would like to suggest that it may be more significant to say that five additional rivers are now known to contain the plant rather than to specify only that 12 "new" towns were added to the distribution list. I suggest this because of the seemingly vulnerable nature of *Podostemum* populations to possible environmental impact (i.e., dam building and pollution). This is due to 1) the very specialized habitat in which the plant grows, and 2) the fact that all the populations located in a given river occur in a common aquatic "corridor." As a result of the latter fact all the populations in a river could conceivably be affected by a single point impact at some location upstream. This impact could then be transported downstream from population to population.

Therefore, I would like to suggest that, in the case of *Podostemum ceratophyllum*, individual rivers instead of towns be considered locations for the plant. This concept may also apply to other river aquatics, although it would not apply to all aquatics in general. Regardless of whether towns or rivers are considered as locations, the true distribution of *Podostemum* is not (and will not be) known until much more field work is completed throughout New England and elsewhere.

LITERATURE CITED

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